

**Contact: Michele Gerber
(509) 376-1475**

FLUOR HANFORD COMPLETES STABILIZATION OF POLYCUBES

Richland, WA, March 19, 2003 -- Fluor Hanford personnel, working at the Plutonium Finishing Plant (PFP) at the Department of Energy's Hanford Site in southeastern Washington state, finished stabilizing an important group of plutonium-bearing materials known as polycubes. The polycubes, small cubes of polystyrene containing pure plutonium oxide, were among the most potentially dangerous forms of plutonium-bearing materials at PFP.

Stabilizing the collection occurred between July 2002 and this month, resulting in significant reductions in radiation dose and risk at the PFP complex. George Jackson, Vice President of the Fluor Hanford Nuclear Material Stabilization Project, noted the technically challenging task posed by the polycubes, saying, "The polycubes presented difficult issues for us for many years – exposing PFP personnel to additional radiation every time they [the cubes] were handled, moved or inspected. In addition, the composition of the polycubes was unique and there wasn't a ready, proven method to stabilize them for safe, long-term storage. Our people, along with personnel from Pacific Northwest National Laboratory, worked long and hard to overcome the technical issues. The success of the polycube stabilization campaign definitely eliminates a high-risk component of the Hanford Site, and I'm extremely proud of all the innovative and dedicated personnel who pooled their talents to accomplish this work."

Stabilizing the two-inch (or smaller) cubes was a focus for the Department of Energy's Richland Operations Office and the Defense Nuclear Facilities Safety Board. Unique to Hanford, approximately 1,000 individual cubes were left over at PFP from Cold War-era experiments.

Stabilizing and handling the cubes was complicated by plastics that had disintegrated over time. Burning the plastics in the stabilization process added soot and toxic fumes to the off-gases, especially if the cubes were heated too fast. PFP personnel conducted extensive tests and developed a long and complicated "char cycle" that safely heated the cubes through a specific heat evolution inside furnaces in gloveboxes. The charring slowly oxidized the polystyrene and other plastics, and left dense plutonium oxide powder to be placed in sturdy, long-term, sealed storage containers.

The volume of cubes being stabilized at one time, as well as the exact length and temperature of heat cycles, all had to be watched carefully over a slow process that took more than three days to stabilize about eight cubes. PFP personnel developed a number of special ways to reduce radiation dose while stabilizing the polycubes. Currently, some of the furnaces used in the polycube campaign are being modified to stabilize the next group of plutonium oxides.

The plutonium generated by the polycube-stabilization campaign was repackaged through a “bagless transfer system” into a welded stainless steel container. Finally, this container was welded into an outer “3013” can, meeting the strict specifications of DOE’s standard for the long-term storage of plutonium.

With the stabilization of polycubes complete, Fluor Hanford’s PFP has now stabilized the two forms of plutonium leftovers that posed the greatest hazards – plutonium-bearing solutions and polycubes. Plutonium metals at the plant have all been stabilized, and oxides are about 25% complete. Approximately 95% of the other large group, residues, has been stabilized. The entire inventory of plutonium-bearing leftovers at PFP is expected to be stabilized by next February.

Once all of the plutonium-bearing materials have been stabilized and packaged for offsite disposition, Fluor Hanford will begin dismantling the Plutonium Finishing Plant complex. The accelerated schedule for site closure calls for having PFP demolished by 2009.

###